UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
25 FUNSTON ROAD
KANSAS CITY, KANSAS 66115

Site: Linwood Mining
ID #: MOD980852297
Break: 1.3
Other: EPA
8-18-89

RECEIVED
AUG 21 1989
PREP SECTION

Date: 8/18/89

MEMORANDUM

SUBJECT: Data Transmittal for Activity #: DC943,
Site Description: Umthun Trucking

FROM: Andrea Jirka
Chief, Laboratory Branch, ENSV

TO: P. Culver
SPFD-WSTM

Attached is the data transmittal for the above referenced site. These data have met all quality assurance requirements unless indicated otherwise in the data package. This is a Modified Data Transmittal; these data are modified and differ from data previously transmitted. If you have any questions or comments, please contact Dee Simmons at 236-3881.

Attachment

cc: Data File
Ann Melia, E&E/FIT

MODIFIED DATA: Data were modified for the following reason(s):
resubmittal by laboratory

30815342
Superfund

DATA REPORTING / QUALIFICATION CODES

U - The material was analyzed for, but was not detected. The associated numerical value is the sample detection limit.

J - The associated numerical value is an estimated quantity (explanation attached).

I - The data are invalid (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

N - Sample not analyzed.

CODES FOR FLASH POINT DATA

L - The sample did not ignite or "flash". This is the highest temperature at which the sample was tested. It is possible that the material may be ignitable at higher temperatures.

K - The sample did ignite or "flash" at the lowest temperature tested. This is usually the ambient temperature at the time of the test. It is possible that the material may be ignitable at even lower temperatures.

ANALYSIS TYPE: METALS, TOTAL

TITLE: UMTHUM TRUCKING | MATRIX: SEDIMENT | UNITS: MG/KG
LAB: NANCO | METHOD: 9001W71 | CASE: 12127
SAMPLE PREP: _____ ANALYST/ENTRY: PLC | REVIEWER: D.COX | DATE: 08/17/89
REVIEW LEVEL: 2 | DATA FILE : P56

SAMPLES	DC943038		DC943040	
ALUMINUM	12000		4300	
ANTIMONY	23	J	12	U
ARSENIC	6.1	J	3.6	J
BARIUM	100		67	
BERYLLIUM	1.1	J	0.82	J
CADMIUM	1.1	J	1.0	U
CALCIUM	200000	J	310000	J
CHROMIUM	18		6.8	
COBALT	8.5	J	10	U
COPPER	9.2	U	14	J
IRON	12000		7900	
LEAD	79		13	
MAGNESIUM	7800		19000	
MANGANESE	2000	J	430	J
MERCURY	0.18	U	0.10	U
NICKEL	22		77	
POTASSIUM	4400	U	1300	U
SELENIUM	4.5	J	1.4	J
SILVER	5.5		2.9	
SODIUM	280	J	1000	U
THALLIUM	2.1	J	0.18	J
VANADIUM	32	U	210	
ZINC	120		43	U
CYANIDE		N		N

MODIFIED DATA

ecology and environment, inc.
CLOVERLEAF BUILDING 3, 6405 METCALF, OVERLAND PARK, KANSAS 66202, TEL. 913/432-9961
International Specialists in the Environment

MEMORANDUM

TO: Debra Morey, Chemist, CLQA/LABO

FROM: Peggy Cox, TAT PC

DATE: August 17, 1989

SUBJECT: Review of data for UMTHUM TRUCKING
TDD# T07-8904-013
PAN# T07-Z054-QSH

These data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluation of Inorganic Analyses," July 1, 1988 revision.

The following comments and attached data sheets are a result of Ecology & Environment Inc.'s review of the above mentioned data from the contract laboratory.

CASE NO.: 12127
CONTRACT NO.: 68-W8-0060
SITE: UMTHUM TRUCKING
REVIEWER: P. COX

LABORATORY: NANCO
METHOD NO.: 9001W71
EPA ACTIVITY: DC943
MATRIX: WATER/ASH/SOIL

SMO SAMPLE NOS.		EPA SAMPLE NOS.	
MGE217	MGE225	DC943900P	DC943037
MGE218	MGE226	DC943031	DC943038
MGE219	MGE227	DC943032	DC943039
MGE220	MGE228	DC943033	DC943040
MGE221	MGE229	DC943034	DC943041
MGE222	MGE230	DC943034D	DC943042
MGE223	MGE231	DC943035	DC943043
MGE224	MGE232	DC943036	DC943044

Resubmittal of data due to laboratory response to results of contract compliance screening (CCS) resulted in one change to the memo and two changes to selenium (Se) results in samples DC943038 and DC943040 on the data sheets. Corrected memo and data sheets are being submitted and are attached.

MODIFIED DATA

GENERAL

Case 12127 contained 16 water/ash/soil samples analyzed for total metals at the low level concentration. Arsenic (As), lead (Pb), selenium (Se), and thallium (Tl) were analyzed by graphite furnace atomic absorption (GFAA) spectroscopy and mercury (Hg) by cold vapor (CV). Data review was performed at level 2.

HOLDING TIMES and PRESERVATION

No technical holding times or required preservation are specified for soil samples.

INITIAL and CONTINUING CALIBRATION

Initial and continuing calibrations were within quality control limit requirements on all parameters.

BLANKS

Arsenic (As) was reported in the water matrix initial calibration blank and aluminum (Al), iron (Fe), potassium (K), vanadium (V), and zinc (Zn) in the continuing calibration blanks. Chromium (Cr) was reported in the water matrix preparation blank. Associated analyte data was qualified by the blank rules.

ICP INTERFERENCE CHECK

All analytes contained in the ICP interference check sample were within quality control limit requirements except antimony (Sb) and potasium (K) which were detected but not an elements in the EPA ICS solution. Antimony was reported at levels greater than the instrument detection limit (IDL) and potassium at levels less than the instrument detection limit (IDL). All data was qualified for antimony (Sb) by the ICP interference check.

LABORATORY CONTROL SAMPLE

All laboratory control samples analyzed met quality control limit requirements.

DUPLICATES

All analytes were within quality control limit requirements except calcium in the soil matrix sample. All soil matrix samples were qualified by the duplicate rules.

MODIFIED DATA

SPIKES

All analytes were within limit requirements for percent recovery except antimony (Sb), arsenic (As), copper (Cu), manganese (Mn), selenium (Se), and thallium (Tl) in the soil matrix sample and lead (Pb) and silver (Ag) in the water matrix sample. Associated sample data was qualified by the spike recovery rules.

GRAPHITE FURNACE ATOMIC ABSORPTION (GFAA)

All parameters requiring GFAA analysis met contractual requirments. Various samples for selenium (Se) and thallium (Tl) were qualified due to post digestion spike recoveries being outside quality control limits.

ICP SERIAL DILUTION

Barium (Ba), beryllium (Be), magnesium (Mg), and vanadium (V) in the soil matrix sample and cadmium (Cd) and nickel (Ni) in the water matrix sample were exceptions to the ICP rule for percent difference since the original sample concentration was less than 50 times the instument detection limit (IDL). No data was qualified by the ICP serial dilution rules.

PERFORMANCE EVALUTATION SAMPLE

Performance evaluation sample DC943900P (MGE217) was analyzed with all anlytes present in the audit being identified. Calcium (Ca) and sodium (Na) were also reported. No data was qualified by the performance evaluation sample.

MODIFIED DATA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY, KANSAS 66115

DATE: 8/18/89

MEMORANDUM

SUBJECT: Data Transmittal for Activity #: DC943,
Site Description: Unruhrum Trucking

FROM: Andrea Jirka
Chief, Laboratory Branch, ENSV

TO: Mike Sanderson
Chief, Superfund Branch, WSTM

ATTN: P. Culver

Attached is the data transmittal for the above referenced site. These data have met all quality assurance requirements unless indicated otherwise in the data package. This should be considered a ___ Partial or X Complete data transmittal (completes transmittal of 8/3/89). If you have any questions
Modified Data 8/17/89
or comments, please contact Dee Simmons at 236-3881.

Attachments

cc: Data Files
Ann Melia, E&E/FIT

DATA REPORTING / QUALIFICATION CODES

U - The material was analyzed for, but was not detected. The associated numerical value is the sample detection limit.

J - The associated numerical value is an estimated quantity (explanation attached).

I - The data are invalid (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

N - Sample not analyzed.

CODES FOR FLASH POINT DATA

L - The sample did not ignite or "flash". This is the highest temperature at which the sample was tested. It is possible that the material may be ignitable at higher temperatures.

K - The sample did ignite or "flash" at the lowest temperature tested. This is usually the ambient temperature at the time of the test. It is possible that the material may be ignitable at even lower temperatures.

ANALYSIS TYPE: EP TOXICITY METALS

TITLE: UMTHUM TRUCKING
LAB: SILVER VALLEY
SAMPLE PREP: _____ ANALYST/ENTRY: PLC
REVIEW LEVEL: 2

MATRIX: WATER
METHOD: 9001W71
REVIEWER: D.COX
DATA FILE : P07

UNITS: UG/L
CASE: 4740G
DATE: 08/15/89

SAMPLES	DC943031	DC943032	DC943033	DC943034
ALUMINUM	210	200 U	200 U	200 U
ANTIMONY	60 U	60 U	60 U	60 U
ARSENIC	10 U	3.0 J	2.5 J	10 U
BARIUM	130 J	130 J	43 J	120 J
BERYLLIUM	5.0 U	5.0 U	5.0 U	5.0 U
CADMIUM	5.0 U	5.0 U	5.0 U	5.0 U
CALCIUM	1700000	2100 J	2000000	2000000
CHROMIUM	10 U	10 U	10 U	10 U
COBALT	50 U	50 U	50 U	50 U
COPPER	25 U	25 U	25 U	25 U
IRON	11 J	100 U	27 J	100 U
LEAD	5.0 U	5.0 U	5.0 U	5.0 U
MAGNESIUM	4600 J	15000	7500	7300
MANGANESE	15 U	1200	940	1500
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	40 U	40 U	40 U	40 U
POTASSIUM	4600 J	25000	36000	23000
SELENIUM	50 U	50 U	50 U	50 U
SILVER	10 U	10 U	10 U	10 U
SODIUM	900 J	2600 J	3300 J	2600 J
THALLIUM	10 U	1.6 J	1.1 J	0.90 J
VANADIUM	8.0 J	8.9 J	10 J	12 J
ZINC	20 U	20 U	8.8 J	6.3 J
CYANIDE	N	N	N	N

ANALYSIS TYPE: EP TOXICITY METALS

TITLE: UMTHUM TRUCKING
LAB: SILVER VALLEY
SAMPLE PREP: _____ ANALYST/ENTRY: PLC
REVIEW LEVEL: 2

MATRIX: WATER
METHOD: 9001W71
REVIEWER: P.COX
DATA FILE : P07

UNITS: UG/L
CASE: 4740G
DATE: 08/15/89

SAMPLES	DC943034D	DC943035	DC943036	DC943037
ALUMINUM	200 U	200 U	200 U	120 J
ANTIMONY	60 U	60 U	60 U	60 U
ARSENIC	4.4 J	10 U	10 U	100 U
BARIUM	160 J	240	440	760
BERYLLIUM	5.0 U	5.0 U	5.0 U	5.0 U
CADMIUM	5.0 U	5.0 U	5.0 U	5.0 U
CALCIUM	2000000	53000	150000	1200000
CHROMIUM	10 U	10 U	10 U	10 U
COBALT	50 U	50 U	50 U	50 U
COPPER	25 U	25 U	25 U	25 U
IRON	100 U	18 J	120	100 U
LEAD	5.0 U	5.0 U	5.0 U	5.0 U
MAGNESIUM	7100	4300 J	9000	25000
MANGANESE	1500	130	8000	4300
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	40 U	40 U	40 U	40 U
POTASSIUM	23000	10000	5000 U	12000
SELENIUM	50 U	5.0 U	5.0 U	50 U
SILVER	10 U	10 U	10 U	10 U
SODIUM	2600 J	320 J	580 J	790 J
THALLIUM	0.90 J	10 U	1.0 J	1.2 J
VANADIUM	12 J	50 U	50 U	4.1 J
ZINC	6.6 J	20 U	23	30
CYANIDE	N	N	N	N

ANALYSIS TYPE: EP TOXICITY METALS

TITLE: UMTHUM TRUCKING
LAB: SILVER VALLEY
SAMPLE PREP: _____ ANALYST/ENTRY: PLC
REVIEW LEVEL: 2

MATRIX: WATER
METHOD: 9001W71
REVIEWER: D.COX
DATA FILE : P07

UNITS: UG/L
CASE: 4740G
DATE: 08/15/89

SAMPLES	DC943038	DC943039	DC943040	DC943041
ALUMINUM	88 J	200 U	200 U	200 U
ANTIMONY	60 U	60 U	60 U	60 U
ARSENIC	10 U	10 U	10 U	10 U
BARIUM	260	550	220	670
BERYLLIUM	5.0 U	0.90 J	5.0 U	5.0 U
CADMIUM	5.0 U	3.4 J	5.0 U	5.0 U
CALCIUM	2000000	480000	2900000	2700000
CHROMIUM	10 U	10 U	10 U	10 U
COBALT	50 U	50 U	50 U	50 U
COPPER	25 U	25 U	25 U	25 U
IRON	14 J	29 J	100 U	100 U
LEAD	5.0 U	5.0 U	50 U	50 U
MAGNESIUM	53000	120000	140 J	5000 U
MANGANESE	13000	5900	2.4 J	15 U
MERCURY	0.20 U	0.20 U	0.20 U	0.40
NICKEL	51	44	40 U	40 U
POTASSIUM	33000	5000 U	8700	3300 J
SELENIUM	50 U	5.0 U	50 U	50 U
SILVER	10 U	10 U	10 U	10 U
SODIUM	2800 J	690 J	1700 J	790 J
THALLIUM	3.9 J	1.0 J	1.4 J	10 U
VANADIUM	16 J	50 U	14 J	4.4 J
ZINC	20 U	7.4 J	20 U	20 U
CYANIDE	N	N	N	N

ANALYSIS TYPE: EP TOXICITY METALS

TITLE: UMTHUM TRUCKING
LAB: SILVER VALLEY
SAMPLE PREP: _____ ANALYST/ENTRY: PLC
REVIEW LEVEL: 2

MATRIX: WATER
METHOD: 9001W71
REVIEWER: D. COX
DATA FILE : P07

UNITS: UG/L
CASE: 4740G
DATE: 08/15/89

SAMPLES	DC943042	DC943043	DC943044
ALUMINUM	200 U	200 U	200 U
ANTIMONY	60 U	27 J	60 U
ARSENIC	2.3 J	2.8 J	10 U
BARIUM	810	760	460
BERYLLIUM	5.0 U	5.0 U	5.0 U
CADMIUM	5.0 U	5.0 U	5.0 U
CALCIUM	1800000	210000	35000
CHROMIUM	10 U	10 U	10 U
COBALT	29 J	62	50 U
COPPER	25 U	25 U	25 U
IRON	37 J	420	110
LEAD	5.0 U	5.0 U	5.0 U
MAGNESIUM	18000	23000	3500 J
MANGANESE	6600	13000	1400
MERCURY	0.20 U	0.20 U	0.20 U
NICKEL	54	47	40 U
POTASSIUM	5000 U	5000 U	8700
SELENIUM	50 U	5.0 U	5.0 U
SILVER	10 U	10 U	10 U
SODIUM	1200 J	1200 J	1700 J
THALLIUM	10 U	10 U	10 U
VANADIUM	50 U	50 U	50 U
ZINC	43	48	32
CYANIDE	N	N	N

ANALYSIS TYPE: SULFATE BY ANION SCAN

TITLE: UMTHUM TRUCKING
LAB: SILVER VALLEY
SAMPLE PREP: _____ ANALYST/ENTRY: PLC
REVIEW LEVEL: 2

MATRIX: WATER
METHOD: 3001WOO
REVIEWER: P.COX
DATA FILE : P83

UNITS: MG/L
CASE: 4740G
DATE: 08/03/89

SAMPLE NO.	RESULT	
DC943001	394	
DC943002F	0.10	U
DC943003	21.8	
DC943004	334	
DC943005	20.2	
DC943006	258	
DC943007	155	
DC943008	37.3	
DC943009	37.9	
DC943010	180	
DC943011	258	
DC943012	50.0	
DC943013	181	
DC943014	135	
DC943015	142	
DC943016	374	
DC943017	69.0	
DC943017D	68.0	
DC943018	12.0	
DC943019	268	

ANALYSIS TYPE: CHLORIDE BY ANION SCAN

TITLE: UMTHUM TRUCKING
LAB: SILVER VALLEY
SAMPLE PREP: _____ ANALYST/ENTRY: PLC
REVIEW LEVEL: 2

MATRIX: WATER
METHOD: 3001W00
REVIEWER: RCox
DATA FILE : P82

UNITS: MG/L
CASE: 4740G
DATE: 08/03/89

SAMPLE NO.	RESULT	
DC943001	33.0	
DC943002F	0.10	U
DC943003	1.01	
DC943004	40.0	
DC943005	0.55	
DC943006	64.8	
DC943007	66.2	
DC943008	2.10	
DC943009	11.3	
DC943010	190	
DC943011	55.6	
DC943012	14.0	
DC943013	84.0	
DC943014	61.6	
DC943015	24.4	
DC943016	112	
DC943017	7.00	
DC943017D	7.20	
DC943018	1.30	
DC943019	27.0	

ANALYSIS TYPE: SULFIDE

TITLE: UMTHUM TRUCKING
LAB: SILVER VALLEY
SAMPLE PREP: _____ ANALYST/ENTRY: PLC
REVIEW LEVEL: 2

MATRIX: SEDIMENT
METHOD: 3761W01
REVIEWER: D.COX
DATA FILE : P84

UNITS: MG/KG
CASE: 4740G
DATE: 08/04/89

SAMPLE NO.	RESULT
DC943031	53.0
DC943032	21.2
DC943033	10.6
DC943034	10.6
DC943034D	21.2
DC943035	10.6
DC943036	10.6
DC943037	10.6
DC943038	21.2
DC943039	21.2
DC943040	21.2
DC943041	10.6
DC943042	10.6
DC943043	21.2
DC943044	10.6

ecology and environment, inc.
CLOVERLEAF BUILDING 3, 6405 METCALF, OVERLAND PARK, KANSAS 66202, TEL. 913/432-9961
International Specialists in the Environment

MEMORANDUM

TO: Debra Morey, Chemist, CLQA/LABO

FROM: Peggy Cox, TAT
THRU: Joseph Chandler, TATL

DATE: August 3, 1989

SUBJECT: Review of data for UMTHUM TRUCKING
TDD# T07-8904-013
PAN# T07-Z054-QSH

These data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluation of Inorganic Analyses," July 1, 1988 revision.

The following comments and attached data sheets are a result of Ecology & Environment Inc.'s review of the above mentioned data from the contract laboratory.

CASE NO.: 4740G
CONTRACT NO.: 68-W8-0074
SITE: UMTHUM TRUCKING
REVIEWER: P. COX

LABORATORY: SILVER VALLEY
METHOD NO.: 3001W00
EPA ACTIVITY: DC943
MATRIX: WATER

SMO SAMPLE NOS.		EPA SAMPLE NOS.	
MGE328	MGE338	DC943001	DC943011
MGE329	MGE339	DC943022F	DC943012
MGE330	MGE340	DC943003	DC943013
MGE331	MGE341	DC943004	DC943014
MGE332	MGE342	DC943005	DC943015
MGE333	MGE343	DC943006	DC943016
MGE334	MGE344	DC943007	DC943017
MGE335	MGE345	DC943008	DC943017D
MGE336	MGE346	DC943009	DC943018
MGE337	MGE347	DC943010	DC943019

GENERAL

Special Analytical Services (SAS) case 4740G contained 20 water samples analyzed for anions chloride (Cl^-) and sulfate (SO_4^{2-}) by ion chromatography. Samples DC943003 (MGE330) and DC943005 (MGE332) had chloride and sulfate results reversed. Data review was performed at level 2.

HOLDING TIMES and PRESERVATION

Technical holding times and required preservation were met on all samples.

INITIAL and CONTINUING CALIBRATION

Initial and continuing calibrations were within quality control limit requirements on all parameters.

BLANKS

Initial, continuing, and preparation blanks were analyzed with no chloride or sulfate being reported. Field blank DC943002F (MGE329) was analyzed with no anions reported.

SPIKES

All analytes were within limit requirements for percent recovery.

PERFORMANCE EVALUTATION SAMPLE

No performance evaluation sample was submitted to the laboratory for analysis.

ecology and environment, inc.
CLOVERLEAF BUILDING 3, 6405 METCALF, OVERLAND PARK, KANSAS 66202, TEL. 913/432-9961
International Specialists in the Environment

MEMORANDUM

TO: Debra Morey, Chemist, CLQA/LABO

FROM: Peggy Cox, TAT
THRU: Joseph Chandler, TATL

DATE: August 4, 1989

SUBJECT: Review of data for UMTHUM TRUCKING
TDD# T07-8904-013
PAN# T07-Z054-QSH

These data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluation of Inorganic Analyses," July 1, 1988 revision.

The following comments and attached data sheets are a result of Ecology & Environment Inc.'s review of the above mentioned data from the contract laboratory.

CASE NO.: 4740G
CONTRACT NO.: 68-W8-0074
SITE: UMTHUM TRUCKING
REVIEWER: P. COX

LABORATORY: SILVER VALLEY
METHOD NO.: 3761W01
EPA ACTIVITY: DC943
MATRIX: WATER

SMO SAMPLE NOS.		EPA SAMPLE NOS.	
MGE348	MGE358	DC943031	DC943040
MGE349	MGE359	DC943032	DC943041
MGE350	MGE360	DC943033	DC943042
MGE351	MGE361	DC943034	DC943043
MGE352	MGE362	DC943034D	DC943044
MGE353		DC943035	
MGE354		DC943036	
MGE355		DC943037	
MGE356		DC943038	
MGE357		DC943039	

GENERAL

Special Analytical Services (SAS) case 4740G contained 16 soil/ash samples analyzed for sulfide by titrametric procedure. Data review was performed at level 2.

HOLDING TIMES and PRESERVATION

No technical holding times or required preservation are specified for soil samples.

INITIAL and CONTINUING CALIBRATION

Initial and continuing calibrations were within quality control limit requirements on all parameters.

BLANKS

Continuing and preparation blanks were analyzed with sulfide being reported. No data was qualified by the blank rules.

SPIKES

All analytes were within limit requirements for percent recovery.

PERFORMANCE EVALUTATION SAMPLE

No performance evaluation sample was submitted to the laboratory for analysis.

ecology and environment, inc.
CLOVERLEAF BUILDING 3, 6405 METCALF, OVERLAND PARK, KANSAS 66202, TEL. 913/432-9961
International Specialists in the Environment

MEMORANDUM

TO: Debra Morey, Chemist, CLQA/LABO

FROM: Peggy Cox, TAT
THRU: Joseph Chandler, TATL

DATE: August 15, 1989

SUBJECT: Review of data for UMTHUM TRUCKING
TDD# T07-8904-013
PAN# T07-Z054-QSH

These data were reviewed according to the "Laboratory Data Validation Functional Guidelines for Evaluation of Inorganic Analyses," July 1, 1988 revision.

The following comments and attached data sheets are a result of Ecology & Environment Inc.'s review of the above mentioned data from the contract laboratory.

CASE NO.: 4740G
CONTRACT NO.: 68-W8-0074
SITE: UMTHUM TRUCKING
REVIEWER: P. COX

LABORATORY: SILVER VALLEY
METHOD NO.: 9001W71
EPA ACTIVITY: DC943
MATRIX: SOIL

SMO SAMPLE NOS.		EPA SAMPLE NOS.	
MGE348	MGE356	DC943031	DC943038
MGE349	MGE357	DC943032	DC943039
MGE350	MGE358	DC943033	DC943040
MGE351	MGE359	DC943034	DC943041
MGE352	MGE360	DC943034D	DC943042
MGE353	MGE361	DC943035	DC943043
MGE354	MGE362	DC943036	DC943044
MGE355		DC943037	

GENERAL

Special Analytical Services (SAS) request 4740G contained 15 soil samples analyzed for EP toxicity total metals at the low level concentration. Arsenic (As), lead (Pb), selenium (Se), and thallium (Tl) were analyzed by graphite furnace atomic absorption (GFAA) spectroscopy and mercury (Hg) by cold vapor (CV). Data review was performed at level 2.

HOLDING TIMES and PRESERVATION

No technical holding times or required preservation are specified for soil samples.

INITIAL and CONTINUING CALIBRATION

Initial and continuing calibrations were within quality control limit requirements on all parameters.

BLANKS

Antimony (Sb), barium (Ba), cobalt (Co), copper (Cu), and silver (Ag) were reported in the initial calibration blank and aluminum (Al), antimony (Sb), barium (Ba), calcium (Ca), copper (Cu), lead (Pb), magnesium (Mg), potassium (K), and silver (Ag) were reported in the continuing calibration blanks. Antimony (Sb) was reported in the preparation blank. Associated analyte data was qualified by the blank rules.

ICP INTERFERENCE CHECK

All analytes contained in the ICP interference check sample were within quality control limit requirements except sodium (Na) which was detected but not an element in the AB ICS solution. Sodium (Na) was reported at levels greater than the instrument detection limit (IDL). All data was qualified for sodium (Na) by the ICP interference check.

LABORATORY CONTROL SAMPLE

All laboratory control samples analyzed met quality control limit requirements.

DUPLICATES

All analytes were within quality control limit requirements.

SPIKES

All analytes were within quality control limit requirements for percent recovery except lead (Pb), selenium (Se) and silver (Ag). All samples were qualified by the spike recovery rules.

GRAPHITE FURNACE ATOMIC ABSORPTION (GFAA)

All parameters requiring GFAA analysis met contractual requirements. Several samples analyzed for arsenic (As), lead (Pb), selenium (Se), and thallium (Tl) had post digestion spike recoveries outside quality control limit requirements. No data was qualified by graphite furnace atonic absorption spectroscopy.

ICP SERIAL DILUTION

Aluminum (Al) and sodium (Na) were exceptions to the ICP rule for percent difference since the original concentration was less than 50 times the instrument detection limit (IDL). No data was qualified by the ICP serial dilution.

PERFORMANCE EVALUTATION SAMPLE

No performance evaluation sample was submitted to the laboratory for analysis.